

3.0 ALTERNATIVES

This chapter describes the process used to identify and analyze the full range of alternatives for a proposed regional transportation facility improvement between SR 303L and US 60. Connection to SR 303L is included in ADOT's Loop 303 project. Additional alternatives were considered and discarded because they would not be technically or economically feasible or practicable or would not satisfy the purpose and need for the new facility. The corridor alternatives are discussed in Section 3.1. The alternatives within the Northern Avenue corridor that were considered and discarded are discussed in Section 3.2. Alternatives studied in detail are described in Section 3.3.

Of the alternatives considered, three build alternatives were considered for detailed analysis and are carried forward in this draft EA:

- Alternative 1 – Northern Avenue Alignment, Option 1 (with two traffic signals)
- Alternative 2 – Northern Avenue Alignment, Option 2 (no traffic signals)
- Alternative 3 – Southern Alignment

The No Build Alternative is used as a baseline from which to compare the build alternatives, if no action were to be taken to improve the Northern Avenue corridor.

3.1 CORRIDOR ALTERNATIVES CONSIDERED

Early in the study phase, a number of existing roadway corridors were evaluated to determine whether they could meet the needs of the rapidly developing western portion of the Phoenix metropolitan area. The study area included west-east corridors bounded by Bell Road/SR 101L on the north and I-10 on the south (see Figure 3-1). The potential corridors were Olive Avenue, Northern Avenue, Glendale Avenue, and Camelback Road. These corridors are located generally in the central portion of the study area and have the potential to connect with regional freeway and state route systems, as defined in the purpose and need for the project. The screening process evaluated those corridors to assess which best met preliminary purpose and need criteria. A corridor along portions of Northern Avenue was identified for further consideration because (1) it would be continuous from US 60 to SR 303L (logical project termini), (2) it would provide good west-east regional spacing between I-10 and SR 101L, and (3) it would form a boundary between municipal jurisdictions. None of the other potential corridors met these criteria and were discarded for the following reasons:

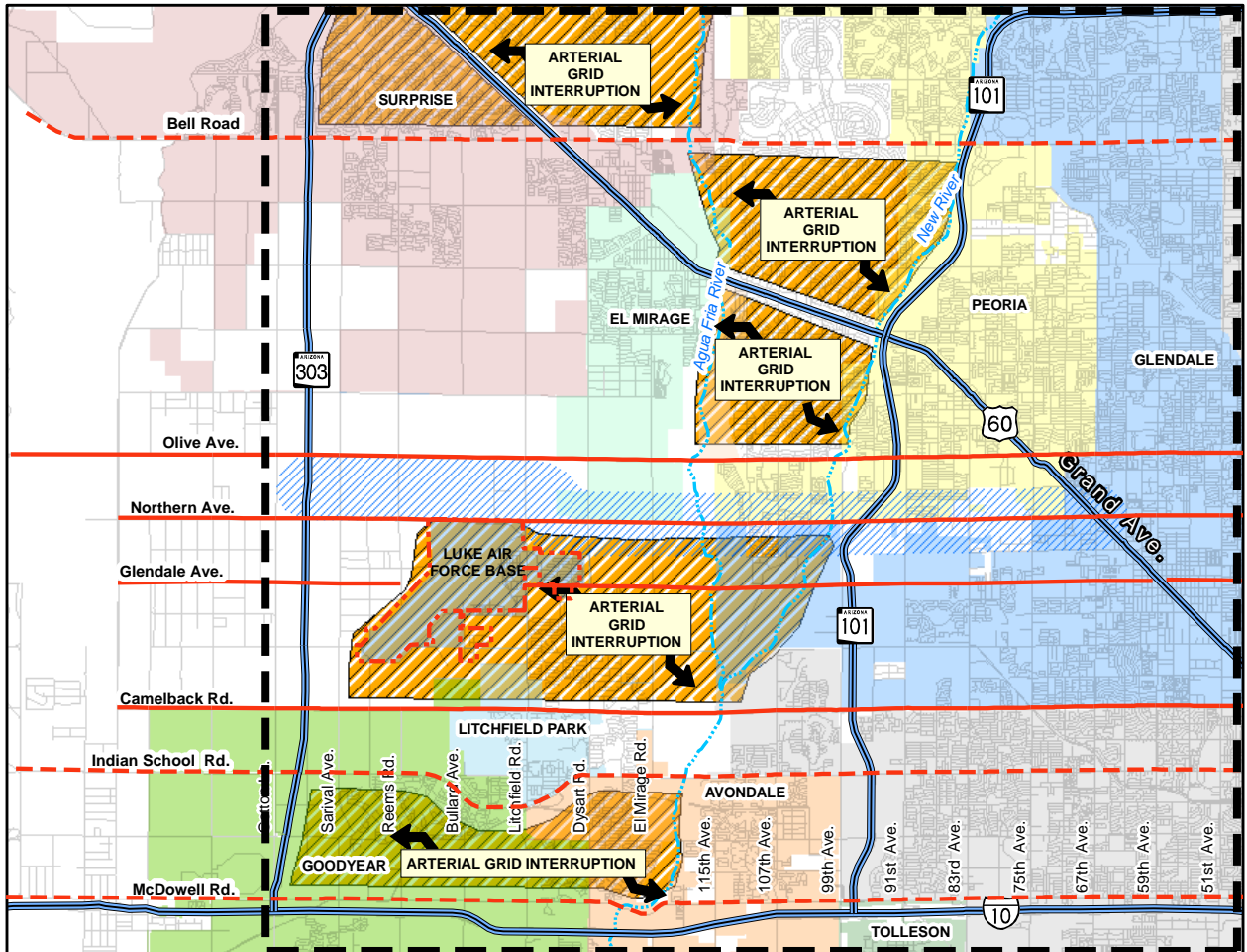
- Olive Avenue was discarded because it bisects the cities of El Mirage and Peoria and is adjacent to heavily developed land uses from the Agua Fria River to US 60.
- Glendale Avenue was discarded because it does not extend through Luke AFB west of Litchfield Road and does not offer a good location to make a high-capacity connection to US 60.
- Camelback Road was discarded because it is not centrally located between I-10 and Bell Road and is adjacent to more heavily developed land uses from SR 101L to US 60. It also does not provide a good location to make a high-capacity connection to US 60.

3.2 ALIGNMENT ALTERNATIVES CONSIDERED BUT ELIMINATED FROM FURTHER STUDY

Several alignment alternatives were considered within the Northern Avenue corridor, which includes Northern Avenue and the area approximately 0.5 mile to the north and south (for alignment flexibility). To assess in more detail the issues, concerns, and opportunities presented by each alternative, the alternatives were separated into four portions: (1) Sarival Avenue to Dysart Road, (2) Dysart Road to 115th Avenue, (3) 115th Avenue to 103rd Avenue, and (4) 103rd Avenue to 91st Avenue. No feasible alternative alignments other than Northern Avenue were found from 91st Avenue to US 60.

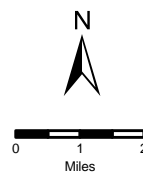
A general summary of the alternatives eliminated from further study from Sarival Avenue to Dysart Road is provided below.

- An alignment along Northern Avenue from SR 303L to Dysart Road was eliminated due to concerns expressed by Luke AFB regarding placement of a high-volume roadway along the northern boundary of the Air Force Base (see Figure 3-1) and potential impacts on their flight operations that could result from elevated portions of the roadway near the end of the runways.
- Alternatives along Olive Avenue were eliminated because of concerns associated with combining local traffic with high volumes of regional parkway traffic at the planned SR 303L interchange at Olive Avenue. Additionally, there were issues related to the proximity to the Burlington Northern Santa Fe Railway (BNSF) with the Olive Avenue alternatives.



Legend

- Corridor Study Area
- ▨ Northern Parkway Corridor
- ▨ Arterial Grid Interruption
- ▬ Freeway / State Highway
- ▬ Potential Corridors
- ▬ Other Arterial Streets
- ▬ Major River



Source:
Arizona State Land Department, 2003.
Maricopa County Department of Transportation, 2001.

Study Area

Northern Parkway

Federal Project No. STP-MMA-0(034)B
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Figure 3-1

A general summary of the alternatives eliminated from further study from Dysart Road to 115th Avenue is provided below.

- An alignment centered on Northern Avenue from Dysart Road to 115th Avenue was eliminated to avoid impacts on existing development along the north side of Northern Avenue and to allow use of the existing Northern Avenue during construction of a new facility. The proposed alignment is centered approximately 100 feet south of the existing Northern Avenue centerline.

A general summary of the alternatives eliminated from further study from 115th Avenue to 103rd Avenue is provided as follows:

- An alternative that included an option with no left turns at the signalized intersections of 107th and 111th avenues was eliminated due to neighborhood access concerns.
- An alternative from 115th to 103rd avenues that provided an access-controlled parkway with frontage roads was eliminated due the number of homes that would need to be acquired in existing neighborhoods to compensate displaced homeowners.

A general summary of the alternatives eliminated from further study from 103rd Avenue to 91st Avenue are listed below.

- Alternatives that included a new eastbound connection to the northbound SR 101L by means of an elevated ramp were eliminated because an updated traffic model showed this ramp was no longer needed.
- Options that did not provide both Northern Parkway and the Northern Avenue street sections were eliminated because the traffic model showed high volume that resulted in the need for two roadways instead of one. The combination of a free-flow “bypass” south of the Northern Avenue Alignment and Northern Avenue street section provides sufficient capacity to accommodate this high-volume portion of the corridor.
- Options that did not provide connectivity and a grade-separated intersection at 93rd Avenue/Peoria crossings were eliminated due to concerns expressed by the City of Peoria.

3.3 ALTERNATIVES STUDIED IN DETAIL

Alternatives evaluated in this draft EA include Alternative 1, Alternative 2, Alternative 3, and the No Build Alternative. All three build alternatives (Alternatives 1, 2, and 3) provide a high-capacity, limited-access roadway with three through lanes in each direction from SR 303L to US 60 (Grand Avenue) with the Northern Parkway elevated over arterial street intersections.

Major features of these alternatives are described in the following sections, and these descriptions serve as a basis for the impact assessment presented in Chapter 4. Based on the evaluation of the purpose and need in Table 3-4 and the evaluation of other factors including traffic operation, constructability, accommodation of future development, project costs; and input from agency partners, stakeholders, and the public; the Northern Parkway Management Committee recommends Alternative 1 as described in the following section as the proposed alternative.

3.3.1 Alternative 1 – Northern Avenue Alignment, Option 1 (with Two Traffic Signals)

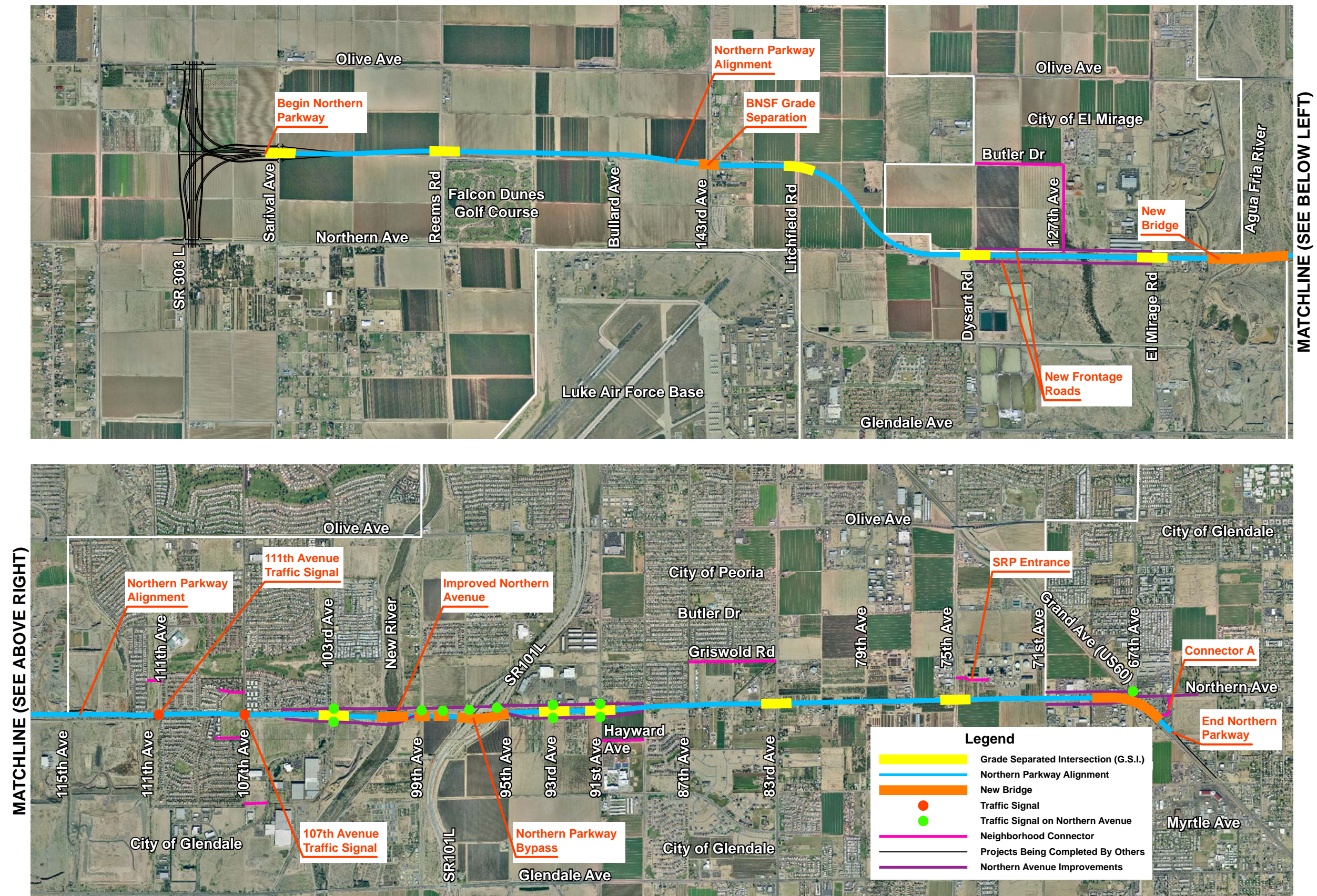
Design Features

Between Sarival Avenue and 115th Avenue, Alternative 1 would have full access control, a planned posted speed of 55 miles per hour (mph), six through lanes plus auxiliary lanes, and would be designed to American Association for State Highway and Transportation Officials (AASHTO) Urban Principal Arterial with Full Access Control standards. East of 115th Avenue, Alternative 1 would have partial access control, a planned posted speed of 45 mph, six through lanes plus auxiliary lanes, and would be designed to MCDOT Urban Principal Arterial standards.

Alignment

Beginning at the west end of the corridor, each build alternative would connect to a fully directional “T” interchange at SR 303L which is part of ADOT’s SR 303L project (see Figure 3-2). Effects of this interchange are included in the *SR 303L/I-10/US 60 Environmental Assessment* and are not included in this draft EA. The SR 303L EA and the Northern Parkway EA match at Sarival Avenue and are consistent. The interchange would be located at the midpoint between Northern and Olive avenues at the Butler mid-section line. The location of the directional ramps would extend east to approximately Sarival Avenue. Alternative 1 would begin at Sarival Avenue and continue eastward along the Butler alignment to Litchfield Road.

From Litchfield Road, Alternative 1 moves in a southeasterly direction and joins the Northern Avenue alignment west of Dysart Road and continues east.



Alternative 1 Concept
Figure 3-2

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From Dysart Road to US 60, Alternative 1 would replace Northern Avenue, with the exception of an approximately 1.5-mile segment between 103rd Avenue and 91st Avenue and east of 71st Avenue. Between 103rd and 91st avenues, a dual configuration has been proposed to maintain access to properties adjacent to Northern Avenue and also provide access to SR 101L ramps (see Figure 3-2). A separate, fully access-controlled bypass would be provided for through traffic on Alternative 1 and would be aligned to the south of Northern Avenue. The bypass would be elevated over 99th Avenue, SR 101L, and 93rd Avenue and would have three lanes plus an auxiliary lane between 103rd and 93rd avenues in each direction.

Starting at 71st Avenue, an elevated ramp would connect Alternative 1 to US 60 to allow eastbound traffic to travel uninterrupted onto southeast-bound US 60 and northwest-bound US 60 traffic uninterrupted travel to westbound Northern Parkway (see Figure 3-3). The elevated ramp would provide one lane in each direction from the median of Northern Avenue near 71st Avenue to the median of Grand Avenue near the BNSF railroad spur crossing south of Northern Avenue. Construction of the flyover ramp would require removal of the existing eastbound lanes of Northern Avenue and the construction of a new eastbound roadway for Northern Avenue south of the existing roadway between 71st Avenue and Grand Avenue. Similarly, the flyover ramp would require the removal of the existing northwest-bound Grand Avenue lanes between Northern Avenue and Orangewood and the construction of a new northwest-bound roadway for Grand Avenue northeast of the existing Grand Avenue.

Also included in Alternative 1 would be improvements to the Northern Avenue/US 60 intersection and widening of Northern Avenue east of US 60 to have six lanes tapering to the existing roadway near the BNSF railroad spur crossing. Left turn movements would be eliminated at the intersection of US 60 and Northern Avenue. To provide for left turns, a new connector road would be constructed on new right-of-way northeast of existing US 60 from US 60 to Northern Avenue just west of the BNSF railroad spur (see Figure 3-3).

Grade-Separated Intersections

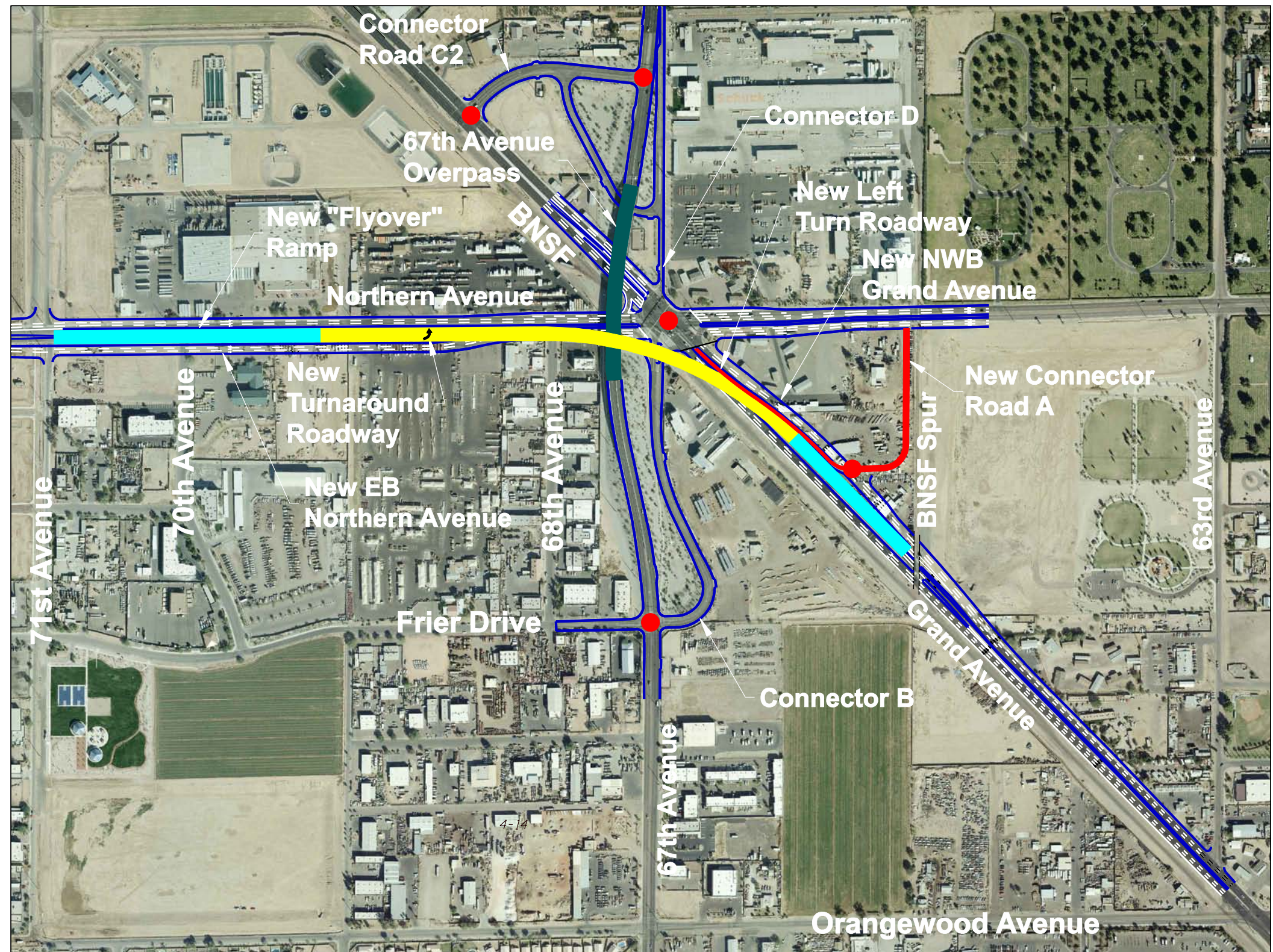
Grade-separated intersections (GSI) are proposed at the following 10 arterial intersections for Alternative 1 (see Table 3-1) (see Figure 3-2 and Figure 3-4):

Legend

- Northern Parkway Flyover Ramp
- Bridge
- Ramps/Connector Roads
- 67th Ave Bridge
- Traffic Signals
- Street Improvements

Features

- No Left Turns At Intersection of Northern & Grand
- Right In / Right Out Access
- 45 MPH Speed Limit



Grand Avenue - Proposed Concept

Figure 3-3

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Prototype Grade-Separated Intersection

Figure 3-4

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Table 3-1
Alternative 1 Grade Separated Intersections

Proposed GSI	Interchange Type*	Northern Parkway Grade
Sarival Avenue	Diamond (East Ramps Only)	Elevated
Reems Road	Diamond	Elevated
Litchfield Road	Diamond	Partially Elevated (Litchfield Road Partially Depressed)
Dysart Road	SPUI	Elevated
El Mirage Road	SPUI	Elevated
103 rd Avenue	SPUI	Depressed
93 rd Avenue	SPUI (West Ramps Only)	Elevated
91 st Avenue	SPUI (East Ramps Only)	Elevated
83 rd Avenue	SPUI	Elevated
75 th Avenue	SPUI	Elevated

*SPUI – Single Point Urban Interchange

Grade separations without connections are included at the BNSF railroad spur near 143rd Avenue, at 99th Avenue, 97th Avenue, SR 101L, and the US 60 elevated ramp. Alternative 1 would allow for free-flowing traffic at grade-separated intersections, and the north-south street that intersects the grade-separated intersection would have a signalized intersection with ramps to and from Northern Parkway, with the exceptions noted above.

Drainage

A series of drainage channels would be constructed along the north side of Northern Parkway in Alternative 1 from Sarival Avenue to Dysart Road to intercept overland flows and onsite runoff and to discharge them into various outfalls.

Crossings at the Agua Fria River and New River would require construction of new bridges to accommodate Alternative 1. The Agua Fria River crosses Northern Avenue between El Mirage Road and 115th Avenue. The Agua Fria floodplain at Northern Avenue is approximately 0.5 mile wide, and floodwater in the river crosses over Northern Avenue during storm events. The FCDMC has adopted a watercourse master plan that would channelize the river and result in a narrower channel for Northern Parkway to cross over.

The channelization of the Agua Fria River from Glendale Avenue to Northern Avenue is included in a separate FCDMC project. The project funding agreement has not been finalized but it is anticipated that the channel will be primarily constructed by adjacent property owners with some funding from FCDMC, MCDOT, and Glendale. The FCDMC project would result in a narrow channel that could be spanned by a new 650-foot-long bridge, which would be part of Alternative 1. If channelization is not accomplished, then a much longer bridge would be required; the length of the bridge would have to be determined. At New River, the existing bridge would be used for westbound Northern Avenue traffic while new bridges would be

constructed for eastbound Northern Avenue traffic and eastbound and westbound (bypass) traffic on the new facility.

Signalized Intersections

With Alternative 1, there would be two signalized intersections: one at 111th Avenue and one at 107th Avenue. These intersections are retained in this alternative to maintain good access to residential neighborhoods on either side of Northern Avenue between 112th Avenue and 103rd Avenue. The inclusion of these two signals is a trade-off between greater neighborhood access compared to reduction in roadway capacity and a potential for an increase in crash rates. To maximize capacity at these two signalized intersections, Northern Parkway would be widened to eight through lanes plus exclusive right-turn lanes. The signalized intersections would be three phased to accommodate left turns and U-turns from Northern Parkway in one signal phase, through movements on Northern Parkway in another phase, and through movements and left turns on the side street in the last phase. Trucks, fire trucks, and buses would not be able to make U-turns at these intersections. The City of Peoria and City of Glendale fire departments expressed concerns regarding the accident potential for the signalized intersections and the inability of fire trucks to make U-turns at these intersections. The neighborhood connector streets and GSIs help to provide reasonable fire truck access to all neighborhoods.

Typical Roadway Sections

Alternative 1 would include three through lanes in each direction from Sarival Avenue to US 60. An auxiliary lane in each direction would be constructed between grade-separated intersections and would be spaced approximately 1 mile apart. Right and left turn lanes would be provided at the signalized intersections where appropriate. A barrier median would be installed to separate eastbound from westbound traffic along most of the Alternative 1 corridor; raised landscaped medians also would be constructed where space is available between 112th Avenue and 103rd Avenue and also between 91st Avenue and 71st Avenue. Paved shoulders would be provided west of 112th Avenue while curbed urban street sections would be included east of 112th Avenue except for the bypass section near Loop 101 and the Grand Avenue Flyover ramp where paved shoulders would be constructed. Street lighting and landscaping would be provided throughout the corridor.

From 103rd Avenue to 99th Avenue, the existing Northern Avenue would become a one-way three-lane westbound frontage road. A new three-lane roadway would be constructed on the south side of the new facility to accommodate eastbound traffic. From 99th Avenue to SR 101L, Northern Avenue would be improved to a six-lane roadway with dual left turn lanes at the SR 101L ramp terminals. Improvements to SR 101L including the addition of a general-purpose

lane, HOV lane, and an auxiliary lane in each direction, are part of planned improvements by ADOT and are not part of the Northern Parkway project. East of SR 101L the existing Northern Avenue would be converted to a one-way three-lane westbound roadway to 91st Avenue. A new three-lane eastbound roadway would be constructed from SR 101L to 91st Avenue on the south side of the new facility. Between 71st Avenue to Grand Avenue a similar situation would occur in that the existing Northern Avenue would be converted to a three-lane one-way westbound roadway and a new three-lane one-way eastbound roadway would be construction south of the Grand Avenue flyover. The flyover ramp would consist of one lane in each direction.

Intersecting Arterial Street Improvements

Construction of improvements on certain intersecting arterials is also included in Alternative 1.

Improvements would be needed at all streets that intersect with the new facility with a grade-separated intersection. These improvements would be limited to the intersection of the ramps with the cross street extending to the curb returns on each side of the new facility. Additional street improvements are included as follows: Dysart Road (1,200 feet south), Glen Harbor (550 feet south), 91st Avenue (650 feet north and 2,800 feet south), and 75th Avenue (1,050 feet north and 800 feet south).

In addition to the improvements mentioned above, 107th Avenue would be modified on either side to Northern Avenue to provide new curb, gutter and sidewalks. Ninety-ninth Avenue would be grade separated with the new facility; but it would intersect with the widened Northern Avenue. Modifications for approximately 200 feet on either side of Northern Avenue are proposed.

Neighborhood Connector Streets

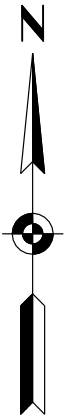
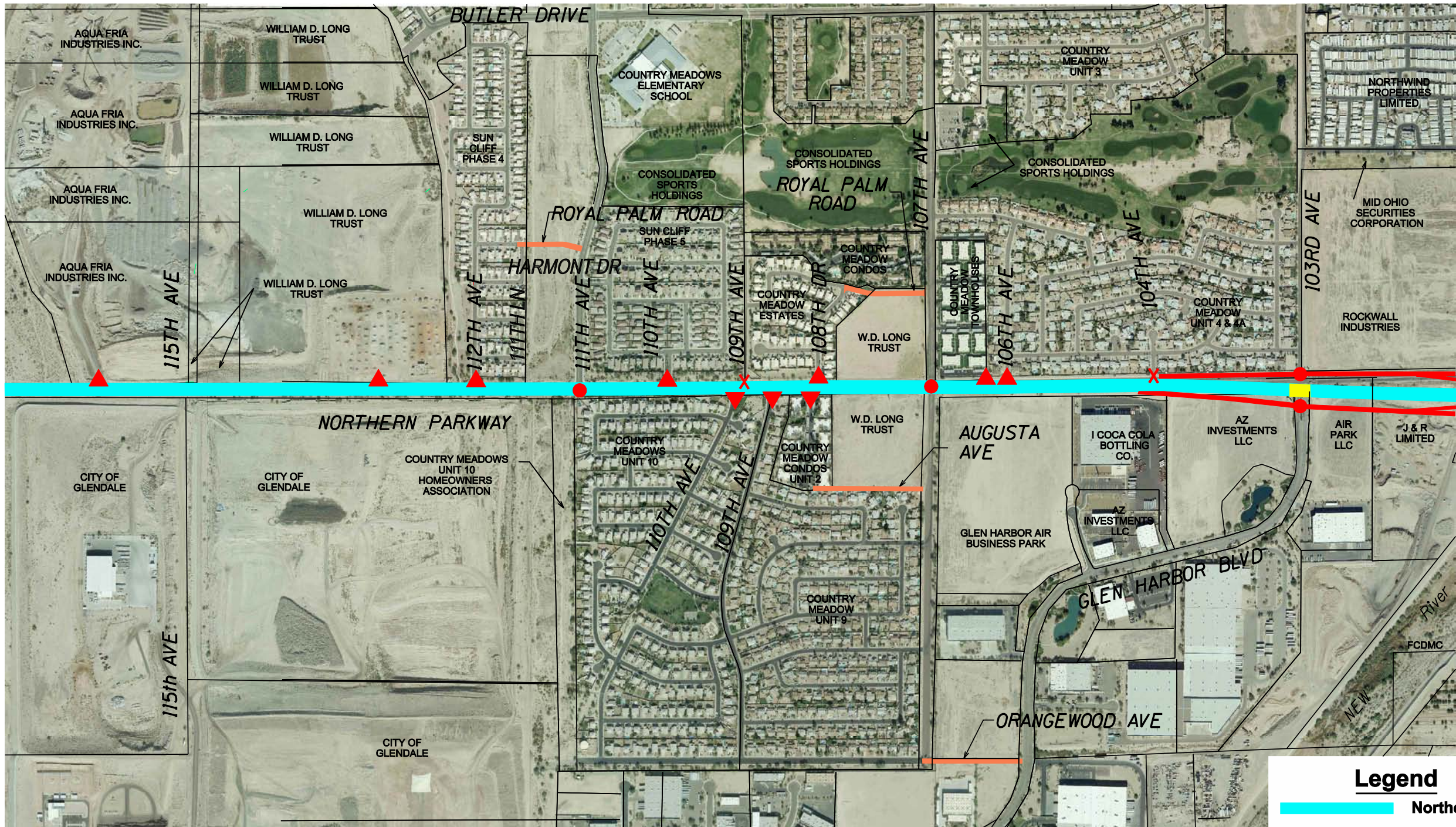
Alternative 1 would be adjacent to several residential neighborhoods and would provide them with direct access. However, that access would change due to the installation of the continuous raised median or median barrier. The “right-in/right-out” access to the neighborhoods and businesses would result in some out-of-direction travel and could constrain neighborhood circulation. To maintain neighborhood circulation and access, eight new neighborhood access streets would be constructed as part of Alternative 1 as follows:

- 127th Avenue/Butler Extension
- Royal Palm Road from 111th Lane to 111th Avenue

- Augusta Avenue from the cul-de-sac in the Country Meadows Condominiums Unit 2 to 107th Avenue
- Royal Palm Road from 108th Drive in Country Meadow Estates to 107th Avenue
- Orangewood Avenue from 107th Avenue to Glen Harbor Boulevard
- Hayward Avenue from 89th Avenue to 91st Avenue
- Griswold Road from 87th Avenue to 83rd Avenue
- Salt River Project (SRP) Access Road from 75th Avenue into the Agua Fria Generating Station

127th Avenue/Butler Drive Extension: Access to the developing area north of Northern Parkway between Dysart Road and El Mirage Road was analyzed extensively by the partner agencies. Although one-way frontage roads on both the north and south sides of the parkway are included in Alternative 1, additional connections were desired to improve circulation and access to Northern Parkway. Several options were analyzed to provide better connection to both future and existing development on the north side of Northern Parkway including the new Hanson Pipe facility. The option agreed to by the Northern Parkway Management Committee consists of constructing 127th Avenue (half mile street) from the Northern Parkway westbound frontage road to Butler Drive (0.5-mile north) and extending Butler Drive from 127th Avenue to Dysart Road (see Figure 3-2). The new streets would add up to approximately one mile in length and would traverse private property.

Royal Palm Road – 111th Lane to 111th Avenue: This street would provide access from Suncliff V neighborhood to 111th Avenue and the 111th Avenue traffic signal at Northern Parkway. Without this new connection, Suncliff V residents desiring to go eastbound on Northern Parkway would either have to go to Butler Drive (0.5 mile north of Northern Avenue) to access 111th Avenue or make a right turn from 112th Avenue onto Northern Parkway go west 1.5 miles on Northern Parkway, make a U-turn at the El Mirage Road GSI and head east on the parkway (see Figure 3-5). The new street would align with Royal Palm Road to the west and be separated far enough north of Harmont Drive on the east side of 111th Avenue so that the new intersection of Royal Palm Road would not cause conflicts for the existing “T” intersection of 111th Avenue and Harmont Drive.



Features

- Left Turn & U Turns at 111th & 107th Avenues
- Right In / Right Out Access
- No Left Turns Between Signals
- 45 MPH Speed Limit
- Northern Parkway Under 103rd Ave

Legend

- Northern Parkway
- Bridge
- Ramps/Connector Roads
- Proposed Access Roads
- Traffic Signals
- ▲ Right-In/Right-Out Access
- X Close Access

Alternative 1 Neighborhood Access - 115th Avenue to 103rd Avenue

Figure 3-5

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Augusta Avenue – West of 107th Avenue: This street would connect 107th Avenue to the Country Meadows Condos Unit 2 subdivision located on the south side of Northern Avenue. The condo neighborhood currently only has access to Northern Avenue (see Figure 3-5). The construction of the raised median would restrict access to Northern Parkway to right-in/right-out only. Westbound Northern Parkway traffic wanting to get to the condo development would be required to make a u-turn at 111th Avenue while residents of Country Meadows Unit 2 wanting to go west on Northern Parkway would make a right-turn and then a u-turn at 107th Avenue. The new Augusta Avenue would eliminate the need for these u-turn movements. The right-of-way for the street would be acquired along the south edge of vacant commercial property. Two condo units of an 8-unit building would have to be removed to make space for the new street.

Royal Palm Road – 108th Drive to 107th Avenue: Extending Royal Palm Road east to 107th Avenue would provide access from the Country Meadows Estates neighborhood to 107th Avenue (see Figure 3-5). Currently the only access to this neighborhood is from Northern Avenue at 109th Avenue and 108th Drive. Access to 108th Drive would become right-in/right-out only while 109th Avenue would be closed. Without this new connector street, eastbound traffic from the neighborhood would have to turn right on Northern Parkway and then make a U-turn at 111th Avenue. The street would be located along the north side of undeveloped commercial property and require the removal of a house in the neighborhood.

Orangewood Avenue – 107th Avenue to Glen Harbor Boulevard: Orangewood Avenue would be extended from 107th east to Glen Harbor Boulevard (see Figure 3-5). This street would provide access from Country Meadows neighborhoods south of Northern Avenue to the proposed 103rd Avenue GSI and provide alternative access to Glendale Avenue to the south. This is considered an important link by the Glendale Fire Department. The new right-of-way would be acquired from private property in the Glen Harbor Business Park that is currently vacant.

104th Avenue Closure: 104th Avenue intersection with Northern Parkway would be closed in Alternative 1 (see Figure 3-5). Eastbound traffic from Country Meadows Units 4 and 4A would access Northern Parkway at either 103rd Avenue or at 106th Avenue. Eastbound traffic using 106th Avenue would head west on Northern Parkway and make a U-turn at the 107th Avenue signalized intersection.

Hayward Avenue – 91st Avenue to 89th Avenue: This street would connect 91st Avenue to 89th Avenue and provide enhanced access for the Rovey Farm Estates neighborhood south of Northern Avenue and east of 89th Avenue (see Figure 3-2). Without this connection, westbound traffic from the neighborhood would take a right-turn at 89th Avenue, head east (0.75 mile) along

Northern Parkway, make a U-turn at 83rd Avenue, and then head west. Right-of-way would be acquired at the south end of vacant property just north of Raymond Kellis High School.

Griswold Road – 87th Avenue to 83rd Avenue: This street would connect 87th and 83rd avenues approximately 0.25-mile north of Northern Parkway (see Figure 3-2). This 0.5-mile-long street would provide enhanced access to Summersett Village neighborhood north of Northern Avenue between 89th and 87th avenues, better access for future commercial development located on the northeast corner of 87th and Northern, an alternative access route to the Omega School located on the north side of Northern Avenue east of 87th Avenue, and other undeveloped properties between 87th and 83rd avenues. The street would be located just south of the SRP transmission tower property. Right-of-way would be acquired from undeveloped private property and the backyards of two homes near the 85th Avenue alignment.

SRP Access – East of 75th Avenue: The SRP Agua Fria Generating Station located northeast of 75th Avenue and Northern Avenue currently has its main entrance off Northern Avenue near the 73rd Avenue alignment. The proposed new access driveway would extend east from 75th Avenue. Without this new access route, eastbound traffic on Northern Parkway headed to the SRP facility would have to continue east one mile past the plant and turn around using the connector roadways at Grand Avenue, which is awkward.

Pedestrian Accommodation

Pedestrian accommodation for Alternative 1 varies from the west portion of the Northern Parkway to the east portion. The west portion of Northern Parkway from Sarival Avenue to 115th Avenue is an access controlled highway. As such, no pedestrians would be allowed within the fenced right-of-way. Pedestrians could cross the highway at grade-separated intersections at Sarival Avenue, Reems Road, Litchfield Road, Dysart Road, and El Mirage Road. Between Dysart Road and El Mirage Road, frontage roads would be provided with sidewalks for pedestrians on the outer edge of the frontage roads. A multi-use path may be constructed with the Agua Fria channelization project which would provide another location for pedestrians to cross Northern Parkway.

Beginning at 112th Avenue (north side) and 111th Avenue (south side) a 6-foot wide concrete sidewalk would be provided along Northern Parkway generally offset from the curb and gutter 9 feet. Pedestrians could cross Northern Parkway at the signalized intersections of 111th Avenue and 107th Avenue. Pedestrian crossings at these intersections would lengthen the side street green signal time (Northern Parkway red time) since pedestrians must cross eight through lanes, right-turn lane, and left-turn lane. The raised medians at the signalized intersections would be used for a pedestrian refuge if necessary. Advance warning signs such as “traffic signal ahead” or flash-

ing beacons and rumble strips would be added to alert traffic of the signal. Pedestrian crossings of Northern Parkway at other locations between 111th and 107th avenues would present safety concerns. Physical barriers in the median would need to be placed at unsignalized locations where pedestrians currently cross Northern Avenue to prevent unprotected pedestrian crossings.

The Northern Parkway Bypass section from 103rd Avenue to 91st Avenue is also access controlled so no pedestrians would be allowed. Parallel to the bypass, the Northern Avenue street section would accommodate pedestrians on sidewalks on one side of the street adjacent to development. Pedestrians could cross Northern Parkway at grade-separated intersections at 103rd Avenue, 93rd Avenue, 91st Avenue, and at other grade separations at 99th Avenue.

Sidewalk would be provided for pedestrians on both sides of Northern Parkway from 91st Avenue to 71st Avenue. The sidewalk would follow the ramps at GSI locations and would not be installed on the GSI overpass bridges. The sidewalk would be 6 feet wide and offset from the curb generally 9 feet. Pedestrians could cross Northern Parkway at grade-separated intersections at 91st Avenue, 83rd Avenue, and 75th Avenue. Physical barriers may need to be placed in the median at 89th Avenue and 87th Avenue to prevent unprotected pedestrian crossings.

From 71st Avenue to Grand Avenue, sidewalks would be provided along Northern Avenue street section on the north side of the westbound roadway and on the south side of the eastbound roadway. The Northern Parkway Grand Avenue “flyover ramp would not accommodate pedestrians while an offset sidewalk would be provided for pedestrians on the northeast side of Grand Avenue. Pedestrians would also be accommodated in the Grand Avenue/Northern Avenue signalized intersection.

Bus Accommodation

Local public bus routes with bus stops would not be accommodated on Northern Parkway. These types of bus routes could be accommodated on the frontage roads between Dysart and El Mirage roads and on Northern Avenue street sections between 103rd Avenue and 91st Avenue and between 71st Avenue and Grand Avenue. Similarly, school bus routes with bus stops would not be accommodated on Northern Parkway. Northern Parkway could accommodate regional bus routes with no stops on the Parkway.

Level of Service

Level of Service (LOS) measures how well a street or highway accommodates predicted future peak hour traffic. LOS A is the best while LOS F is extremely congested. LOS E or F are typically considered unacceptable for a new facility.

Alternative 1 would generally provide for the future 2030 traffic reasonably well as measured by the LOS. The signalized intersections of Northern Parkway and 111th Avenue and Northern Parkway and 107th Avenue are predicted to operate at LOS F in the morning and evening peak hours in 2030. Physical constraints with the location of homes plus the need to provide access to the adjacent neighborhoods combined to result in a less than optimal situation.

Another location that is predicted to experience LOS F is the intersection of 103rd Avenue, 103rd Avenue east ramps, and the beginning of the Northern Avenue street section east of 103rd Avenue. This location is also constricted physically by residential and industrial development. High volumes of traffic are predicted to pass through this intersection since it will serve as the Northern Parkway connection to Loop 101.

Access to Loop 101 would be accomplished using the improved Northern Avenue street. The improved signalized intersection of Northern Avenue and Loop 101 ramps would operate LOS B to D in 2030 while the merge and diverge movements for these ramps on the improved Loop 101 would operate at LOS B and C in 2030 in the peak hours.

Right-of-Way

From Sarival Avenue to 115th Avenue, Alternative 1 would require acquisition of new right-of-way from generally undeveloped property. Between Dysart Road and 115th Avenue, right-of-way is generally required along the south side of Northern Avenue avoiding several businesses including Hanson Pipes and a storage unit facility located on the north side of Northern Parkway. Several businesses on the south side of Northern Avenue east of El Mirage Road, including Dakota Fabricating Inc., would need to be acquired to construct Northern Parkway.

East of 115th Avenue, right-of-way would be required from some developed areas. Several homes would need to be acquired in between 115th Avenue and 107th Avenue to accommodate Northern Parkway and associated connector streets. East of Loop 101, two homes would need to be removed with Alternative 1 and several homes for farm workers would need to be removed between 87th Avenue and 75th Avenue. A gas station on the southeast corner of 91st Avenue and Northern Avenue would require relocation and several businesses along the south side of Northern Avenue between 71st Avenue and Grand Avenue would be impacted, and parking lots would need to be reconfigured.

Right-of-way requirements along Grand Avenue and Northern Avenue east of Grand Avenue are such that entire businesses would need to be acquired and relocated including mobile home sales, trailer sales, a trucking company, auto repair shop, veterinarian office, and several motels.

For Alternative 1, the right-of-way width would vary from 140 feet to 350 feet. Total new area of right-of-way for Alternative 1 would be 305 acres.

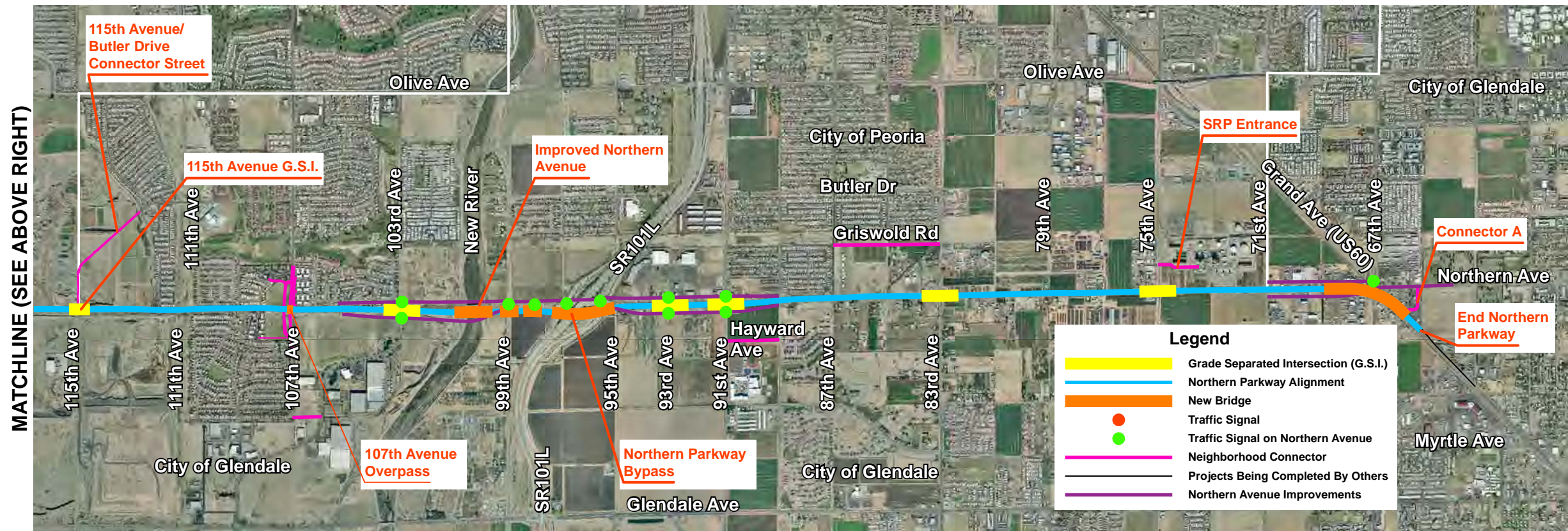
3.3.2 Alternative 2 – Northern Avenue Alignment, Option 2 (No Traffic Signals)

Design Features

The design features of Alternative 2 are the same as Alternative 1 from Sarival Avenue to 115th Avenue and from 103rd Avenue to Grand Avenue (see Figure 3-6).

Alternative 2 eliminates the two traffic signals at 111th and 107th avenues that are part of Alternative 1. To replace the signal at 107th Avenue, 107th Avenue would be elevated over Northern Parkway with street connectors (“jughandles”) providing access to Northern Parkway (see Figure 3-7). This configuration would allow residents on the north and south sides of Northern Parkway to travel in east and west directions without having to make left turns onto the new facility. To accommodate this, northside residents wishing to travel east, and southside residents traveling west, would need to drive over the bridge and loop back to Northern Parkway on the “jughandle” connector streets, where they could make a right turn onto Northern Parkway. This option is less traditional and requires more right-of-way than the traffic signals proposed in Alternative 1, but it would enhance the traffic flow and capacity of Northern Parkway. In addition, the elevated 107th Avenue would provide pedestrian movements across Northern Parkway separated from Northern Parkway traffic. Both the Glendale and Peoria fire departments expressed support for the connection provided by the 107th Avenue overpass.

To replace the signal at 111th Avenue, an additional grade-separated intersection would be constructed near the 115th Avenue alignment (see Figure 3-7). Butler Drive would be extended westward and southward to connect to this grade-separated intersection, thereby providing access between the parkway and the neighborhoods that are located to the north of the Northern Parkway and east of the sand-and-gravel mining operations. The intersection of 111th Avenue at Northern Parkway would provide right-turn-only movements on and off the new facility. The 115th Avenue grade-separated intersection would be elevated above Northern Parkway and provide for U-turn movement for neighborhood access. There would be no access to or from the south of the parkway at the 115th Avenue grade-separated intersection; that area is occupied by a large landfill operated by the City of Glendale. The Royal Palm Road connection from 111th Lane to 111th Avenue in Alternative 1 is not included in Alternative 2.



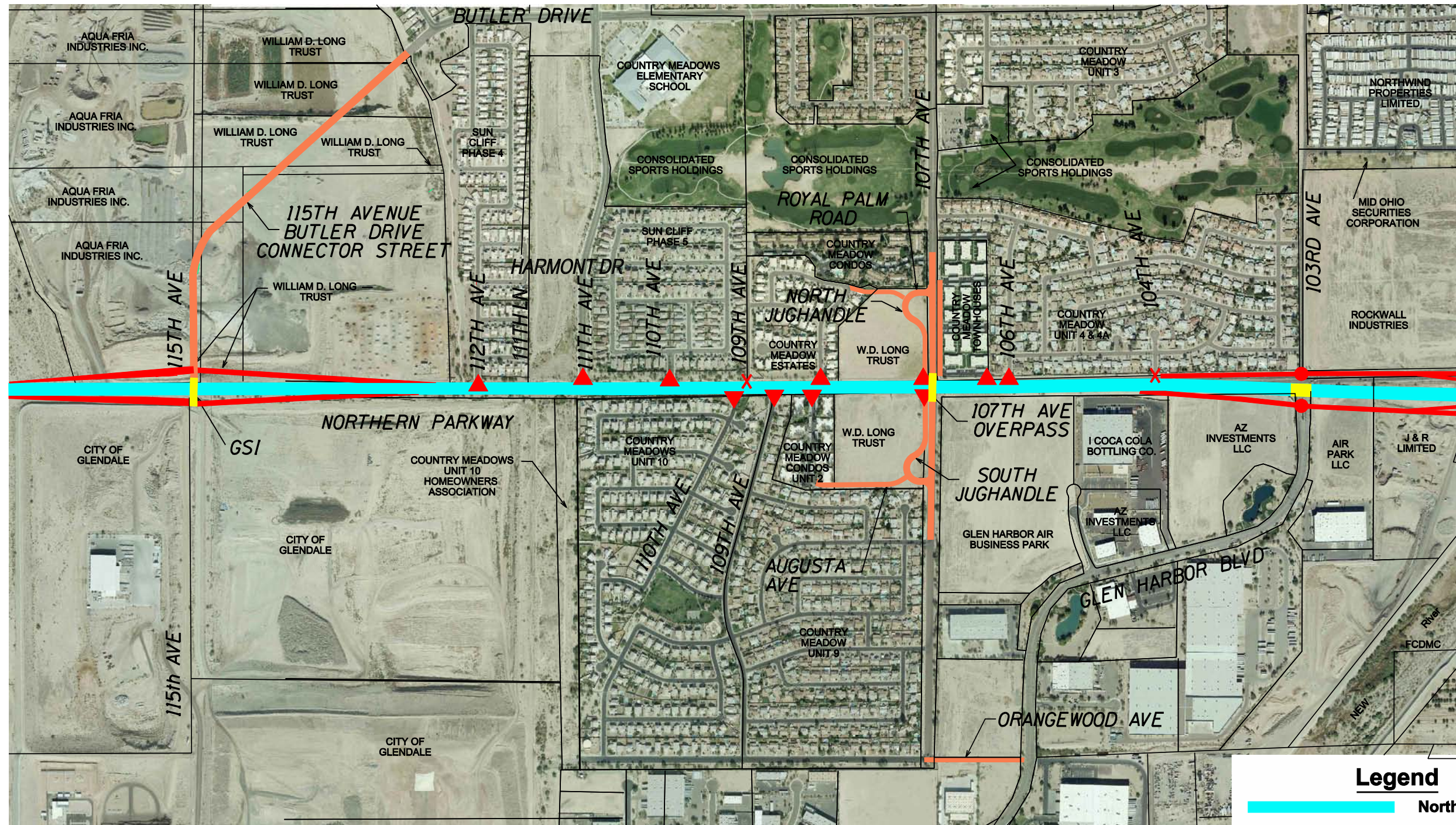
MATCHLINE (SEE ABOVE RIGHT)

MATCHLINE (SEE BELOW LEFT)



Alternative 2 Concept
Figure 3-6

Federal Project No. STP-MMA-0(034)B
TRACS No. 0000 MA MMA SS593 01C



Features

- Left Turn & U Turns at 111th & 107th Avenues
- Right In / Right Out Access
- No Left Turns Between Signals
- 45 MPH Speed Limit
- Northern Parkway Under 103rd Ave

Legend

- █ Northern Parkway
- █ Bridge
- █ Ramps/Connector Roads
- █ Proposed Access Roads
- Traffic Signals
- ▲ Right-In/Right-Out
- ✕ Close Access

Alternative 2 Neighborhood Access - 115th Avenue to 103rd Avenue
Figure 3-7

Federal Project No. STP-MMA-0(034)B
TRACS No. 0000 MA MMA SS593 01C

The elimination of the two signals at 111th and 107th avenues approximately doubles the capacity of Alternative 2, compared to Alternative 1, to 146,000 vehicles per day (vpd) from 80,000 vpd. The removal of the traffic signals would also result in attracting approximately 40 percent more traffic to the vicinity of 111th to 107th avenues (89,000 to 126,000 vpd). It would also reduce crashes that commonly occur at traffic signals, reduce travel time, and eliminate congestion at 107th and 111th avenues; however, it would make access to and from the residential neighborhoods between 112th and 107th avenues more awkward and result in more out-of-direction travel.

Pedestrians would not be able to cross the new facility at the signal on 111th Avenue with Alternative 2. Pedestrian crossings in this area would be restricted to the grade-separated intersection at 107th Avenue.

Alignment

The alignment of Northern Parkway for Alternative 2 is the same as Alternative 1.

Grade-Separated Intersections

GSIs are proposed at the same locations as Alternative 1, except two additional locations are included totaling 12 arterial intersections for Alternative 2 (see Table 3-2):

Table 3-2
Alternative 2 Grade Separated Intersections

Proposed GSI	Interchange Type*	Northern Parkway Grade
Sarival Avenue	Diamond (East Ramps Only)	Elevated
Reems Road	Diamond	Elevated
Litchfield Road	Diamond	Partially Elevated (Litchfield Road Partially Depressed)
Dysart Road	SPUI	Elevated
El Mirage Road	SPUI	Elevated
115 th Avenue	SPUI	At-Grade (115 th Ave. Elevated)
107 th Avenue	“Jughandle” Connections	At-Grade (107 th Ave. Elevated)
103 rd Avenue	SPUI	Depressed
93 rd Avenue	SPUI (West Ramps Only)	Elevated
91 st Avenue	SPUI (East Ramps Only)	Elevated
83 rd Avenue	SPUI	Elevated
75 th Avenue	SPUI	Elevated

*SPUI – Single Point Urban Interchange

As with Alternative 1, Alternative 2 includes grade separations without connections at the BNSF railroad spur near 143rd Avenue, at 99th Avenue, 97th Avenue, SR 101L, and the US 60 elevated ramp. At 107th Avenue ramps are replaced with “jughandle” connector roads with right-in/right-out at-grade intersections with Northern Parkway and intersections with 107th Avenue north and south of Northern Parkway.

Drainage

The major drainage features of Alternative 2 are the same as Alternative 1.

Signalized Intersections

There are no traffic signals on the mainline Northern Parkway in Alternative 2. Both the Glendale and Peoria fire departments support the elimination of the traffic signals at 111th and 107th avenues and providing for U-turn movements at GSIs at 115th and 103rd avenues.

Typical Roadway Sections

The typical sections for Northern Parkway in Alternative 2 are the same as Alternative 1.

Intersecting Arterial Street Improvements

Intersecting arterial street improvements would be the same in Alternative 2 as in Alternative 1 except for 107th Avenue, which would be modified on either side to Northern Parkway from Royal Palm Road on the north to Augusta Avenue on the south to provide the approach roadways to the new 107th Bridge over Northern Parkway. Another difference is that 107th Avenue would transition from the five-lane section north of the improvements to a three-lane section for the approach roadways and bridge and consist of an urban section with curb, gutter, and sidewalks.

Neighborhood Connector Streets

Alternative 2 would be similar to Alternative 1 except between 115th Avenue and 103rd Avenue. To maintain neighborhood circulation and access between 115th Avenue and 103rd Avenue, four new neighborhood access streets would be constructed as part of Alternative 2 as follows:

- 115th Avenue/Butler Drive
- Augusta Avenue from the cul-de-sac in the Country Meadows Condominiums Unit 2 to 107th Avenue
- Royal Palm Drive from 108th Drive in Country Meadow Estates to 107th Avenue
- Orangewood Avenue from 107th Avenue to Glen Harbor Boulevard

115th Avenue/Butler Drive: This street would connect the proposed 115th Avenue GSI with neighborhoods to the northeast in the Suncliff and Country Meadows neighborhoods (see Figure 3-7). This street would begin at the 115th Avenue GSI and head northward. It would then curve to the northeast and connect to existing Butler Drive. This new street would be about 0.6 mile long. The roadway would traverse private property that is being mined by sand and

gravel companies. The construction of this street would require a City of Peoria General Plan Amendment. Without this connector street and the 115th Avenue GSI, residents of the Suncliff neighborhoods wanting to go eastbound on Northern Parkway would need to take a right turn at 112th, 111th or 110th avenues, go west approximately 1.5 miles to El Mirage Road where they could make a U-turn and head east on Northern Parkway.

Augusta Avenue – West of 107th Avenue: This street would connect 107th Avenue to the Country Meadows Condos Unit 2 subdivision located on the south side of Northern Avenue. The condos currently only have access to Northern Avenue (see Figure 3-7). Without this new connector street, westbound traffic wanting to get to the condos would have to make a U-turn at 115th Avenue. The right-of-way for the street would be acquired along the south edge of vacant commercial property. Two condo units of an 8-unit building would have to be removed to make space for the new street and driveway.

Royal Palm Road – 108th Drive to 107th Avenue: Extending Royal Palm Road east to 107th Avenue would provide access from the Country Meadows Estates neighborhood to 107th Avenue (see Figure 3-7). Currently the only access to this neighborhood is from Northern Avenue at 109th Avenue and 108th Drive. Access to 108th Drive would become right-in/right-out only while 109th Avenue would be closed. Without this new connector street, eastbound traffic from the neighborhood would have to turn right on Northern Parkway and then make a U-turn at 115th Avenue GSI. The street would be located along the north side of undeveloped commercial property and require the removal of a house in the neighborhood.

Orangewood Avenue – 107th Avenue to Glen Harbor Boulevard: Orangewood Avenue would be extended from 107th Avenue east to Glen Harbor Boulevard (see Figure 3-7). This street would provide access from Country Meadows neighborhoods south of Northern Avenue to the proposed 103rd Avenue GSI and provide alternative access to Glendale Avenue to the south. This connection would allow residents to avoid the jughandle connection at 107th Avenue by using the GSI at 103rd Avenue. The new right-of-way would be acquired from private property in the Glen Harbor Business Park that is currently vacant.

104th Avenue Closure: Traffic from Country Meadows Units 4 and 4A desiring to go eastbound on Northern Parkway would make a right turn onto Northern Parkway at 106th Avenue, head west approximately 1 mile to 115th Avenue GSI, and then make a U-turn or use the 103rd Avenue GSI.

Pedestrian Accommodation

Pedestrian accommodation for Alternative 2 is the same as Alternative 1 from Sarival Avenue to 115th Avenue and from 103rd Avenue to Grand Avenue.

Beginning at 112th Avenue (north side) and 111th Avenue (south side) a 6-foot-wide concrete sidewalk would be provided generally offset from the curb and gutter 9 feet. Pedestrians could cross Northern Parkway at the 107th Avenue overpass. Pedestrian crossings of Northern Parkway at 111th Avenue and at other locations could present safety concerns. Physical barriers in the median may need to be placed at locations where pedestrians currently cross Northern Avenue to prevent unprotected pedestrian crossings. Providing a grade separated pedestrian crossing at 111th Avenue or 110th Avenue is another option that may need to be considered if further analysis of the pedestrian traffic in the area shows sufficient justification for the pedestrian crossing.

Bus Accommodation

Alternative 2 accommodates buses similar to Alternative 1.

Level of Service

Alternative 2 would generally provide for the future 2030 traffic reasonably well as measured by the LOS. Since the elimination of the two traffic signals in Alternative 1 increases capacity of Northern Parkway in Alternative 2, traffic volumes are predicted to be up to 40 percent higher than Alternative 1 traffic; consequently, the LOS for Alternative 2 is generally worse than Alternative 1. The LOS is E for the eastbound traffic in the AM peak hour and the westbound traffic in the PM peak hour from Dysart Road to 91st Avenue.

The intersection of 103rd Avenue, 103rd Avenue east ramps, and the beginning of the Northern Avenue street section east of 103rd Avenue would operate at LOS F similar to Alternative 1. This location is also constricted physically by residential and industrial development. High volumes of traffic are predicted to pass through this intersection since it will serve as the Northern Parkway connection to Loop 101.

The increased volumes for Alternative 2 cause the intersection of 99th Avenue and Northern Avenue to experience LOS E with anticipated 2030 traffic volumes.

Right-of-Way

Alternative 2 is similar to Alternative 1 except Alternative 2 requires about 8 more acres of right-of-way primarily for the 115th Avenue/Butler Drive connector street for a total of 313 acres.

3.3.3 Alternative 3 – Southern Alignment

Design Features

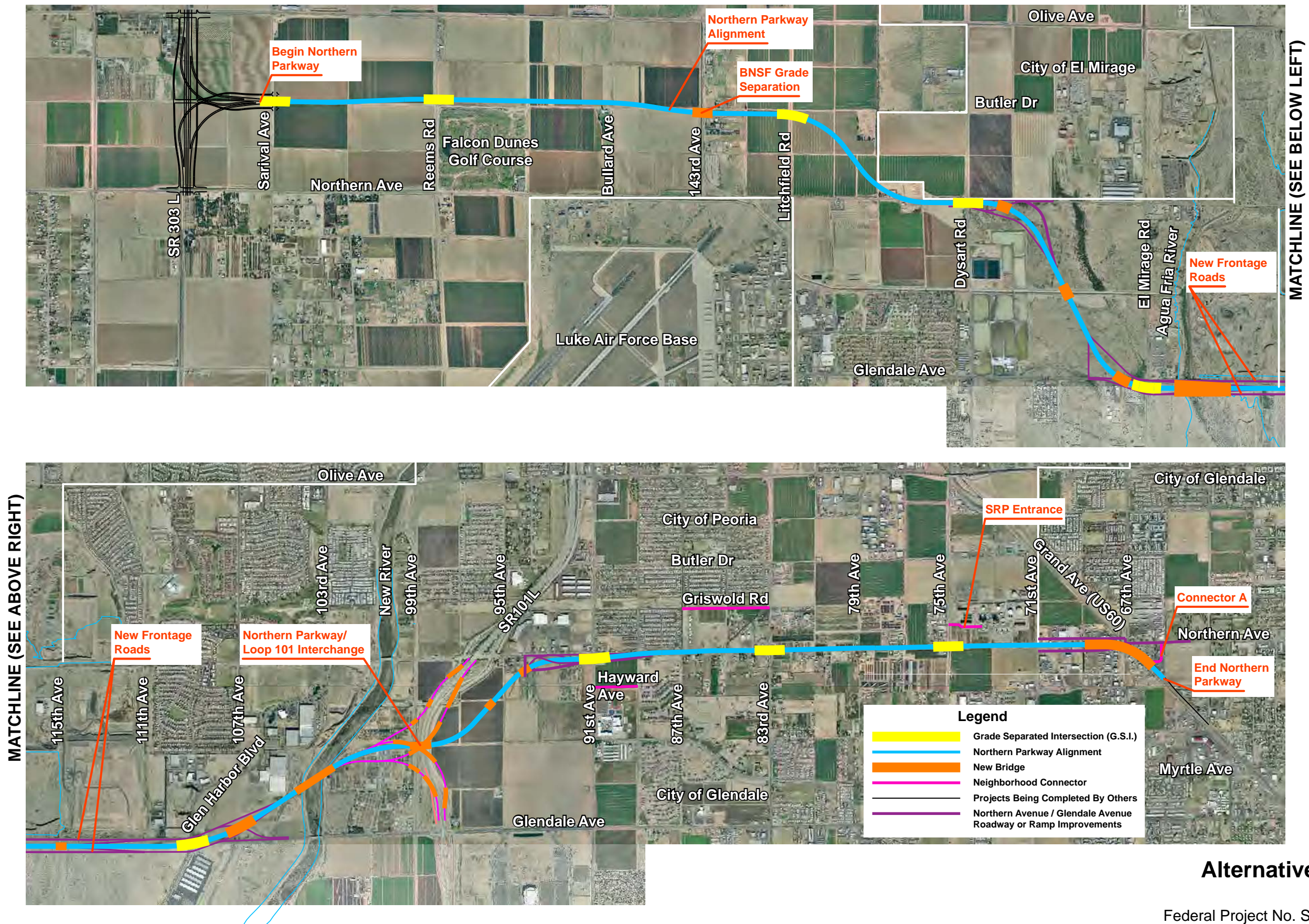
Alternative 3 is similar to Alternatives 1 and 2 west of Dysart Road and east of 91st Avenue. The west segment (Sarival Avenue to 91st Avenue) has full access control, a planned posted speed of 55 mph, six through lanes plus auxiliary lanes, and would be designed to AASHTO standards. The east segment (91st Avenue to Grand Avenue) has partial access control, a planned posted speed of 45 mph, six through lanes plus auxiliary lanes, and would be designed to MCDOT standards.

Alignment

The total length of Alternative 3 would be 13.3 miles, which is 0.9 mile longer than Alternatives 1 and 2. Alternative 3 would be the same as Alternatives 1 and 2 from Sarival Avenue to Dysart Road and from 91st Avenue to US 60. However, Alternative 3 would deviate from the existing Northern Avenue Alignment and extend in a southeasterly direction just east of the Dysart Road and Northern Avenue intersection, where the roadway would pass through undeveloped property before joining with Glendale Avenue at El Mirage Road. As shown in Figure 3-8, the alignment would continue eastward, replacing Glendale Avenue until approximately Glen Harbor Boulevard, where the roadway would head in a northeasterly direction and pass through undeveloped property and cross SR 101L midway between Glendale Avenue and Northern Avenue. East of SR 101L, Alternative 3 would curve north and match Alternatives 1 and 2 improvements near 91st Avenue.

Grade-Separated Intersections

Grade-separated intersections (GSI) are proposed at the same locations as Alternative 1 west of Dysart Road and east of 91st Avenue totaling 9 arterial intersections for Alternative 3 as shown in Table 3-3.



Alternative 3 Concept

Figure 3-8

Federal Project No. STP-MMA-0(034)B
TRACS No. 0000 MA MMA SS593 01C

Table 3-3
Alternative 3 Grade Separated Intersections

Proposed GSI	Interchange Type*	Northern Parkway Grade
Sarival Avenue	Diamond (East Ramps Only)	Elevated
Reems Road	Diamond	Elevated
Litchfield Road	Diamond	Partially Elevated (Litchfield Road Partially Depressed)
Dysart Road	SPUI	Elevated
El Mirage Road at Glendale Avenue	SPUI	Elevated
Glen Harbor Boulevard at Glendale Avenue	SPUI	Depressed
91 st Avenue	SPUI	Elevated
83 rd Avenue	SPUI	Elevated
75 th Avenue	SPUI	Elevated

*SPUI – Single Point Urban Interchange

Grade separations without connections are included at the BNSF railroad spur near 143rd Avenue, at 115th Avenue/Glendale Landfill Entrance, a future street east of Loop 101, 95th Avenue, and the US 60 elevated ramp. A system interchange at SR 101L would be provided at Northern Parkway in Alternative 3. Free flow connections to and from Northern Parkway west of SR 101L would be provided including an overpass connection to Northern Parkway east of SR 101L.

Drainage

The drainage features in Alternative 3 are the same as Alternative 1 from Sarival Avenue to Dysart Road and from 91st Avenue to Grand Avenue.

A new bridge would be included over the Dysart Drain. As with Alternatives 1 and 2, this alternative would require bridge crossings of the Agua Fria River and New River. The existing Glendale Avenue structure across the Agua Fria River would be maintained to accommodate traffic along the westbound frontage road. As with Alternatives 1 and 2, the Agua Fria River near Glendale Avenue is included in the FCDMC Watercourse Master Plan for channelization. A new bridge south of the existing Glendale Avenue Bridge is required for a new eastbound frontage road bridge, and a new bridge is required for the parkway. The existing bridge is approximately 630 feet. Similar lengths could possibly be used for the two new bridges without river channelization.

The New River bridge for Alternative 3 would cross the river at an angle that would result in the New River Bridge being approximately twice as long as the new facility's bridge over the New River for Alternatives 1 and 2.

Signalized Intersections

There are no traffic signals on the mainline Northern Parkway in Alternative 3.

Typical Roadway Section

Alternative 3 would include a fully access-controlled, grade-separated highway consisting of three through lanes in each direction plus an auxiliary lane between grade-separated intersections and full-width paved shoulders from Sarival Avenue to 91st Avenue. This is the same type of facility included in the western portion of Alternatives 1 and 2 from Sarival Avenue to 115th Avenue.

One-way frontage roads would be provided from El Mirage Road to Glen Harbor Boulevard and would connect to Glendale Avenue east and west of the new facility. The westbound frontage road would replace the existing Glendale Avenue roadway.

East of SR 101L, this alternative would be a fully access-controlled facility until 91st Avenue, where it would transition to the partially access-controlled facility proposed for the eastern portion of Alternatives 1 and 2.

Intersecting Arterial Street Improvements

Intersecting arterial street improvements are the same in Alternative 3 as in Alternative 1 from Sarival Avenue to Dysart Road and from 91st Avenue to Grand Avenue. Arterial connections would be provided for Northern Avenue at Dysart Road and at 91st Avenue. New eastbound roadways would align with eastbound ramp connections to Northern Parkway. The eastbound roadways would go underneath the parkway and connect to the existing Northern Avenue. Similarly, arterial connections would be provided for Glendale Avenue at El Mirage Road and at Glen Harbor Boulevard. Eastbound and westbound frontage roads would extend across the intersections and transition to meet the existing Glendale Avenue. At El Mirage Road the westbound roadway would go under Northern Parkway while at Glen Harbor Boulevard, the westbound roadway would go over Northern Parkway.

Neighborhood Connector Streets

Alternative 3 would be the same as Alternative 1 west of Dysart Road and east of 91st Avenue. Since the adjacent land along Alternative 3 between Dysart Road and 91st Avenue is less developed and a frontage road is planned on each side of Northern Parkway between El Mirage Road and Glen Harbor Boulevard, no neighborhood connector streets are necessary between Dysart Road and 91st Avenue. Provisions are included to connect Northern Parkway with

Northern Avenue east of Dysart Road. Grade separations are included near 95th Avenue to accommodate future streets in the area.

Pedestrian Accommodation

Pedestrian accommodation for Alternative 3 is the same as Alternative 1 from Sarival Avenue to Dysart Road and east of 91st Avenue. Northern Parkway from Dysart Road to 91st Avenue is access controlled. As such, no pedestrians would be allowed within the fenced right-of-way. Pedestrians could cross the highway at grade-separated intersections at Dysart Road, El Mirage Road, Glen Harbor Boulevard and 91st Avenue. Additional grade separations at 115th Avenue/Glendale Land Fill Entrance, 99th Avenue, a future street east of Loop 101, and 95th Avenue would allow pedestrian crossings of Northern Parkway. Between El Mirage Road and Glen Harbor Boulevard, frontage roads would be provided with sidewalks for pedestrians on the outer edge of the frontage roads. A multi-use path may be constructed with the Agua Fria channelization project and along the New River, which would provide other locations for pedestrians to cross Northern Parkway.

Bus Accommodation

Alternative 3 also would not accommodate local public bus routes with bus stops or school bus stops. The existing Bus Route 70 along Glendale Avenue could be accommodated along the frontage roads between El Mirage Road and Glen Harbor Boulevard.

Level of Service

Alternative 3 would generally provide for the future 2030 traffic reasonably well as measured by the LOS. The traffic volumes are predicted to be similar to Alternative 2 traffic on Northern Parkway. The LOS is E for the eastbound traffic in the AM peak hour and the westbound traffic in the PM peak hour from Dysart Road to SR 101L.

The signalized intersection of El Mirage Road, and Glendale Avenue eastbound and westbound frontage roads is predicted to operate with LOS F in 2030 as well as the signalized intersection Glen Harbor Boulevard and Glendale Avenue eastbound and westbound frontage roads.

SR 101L Connection

A fully directional system interchange with SR 101L connecting Northern Parkway west of SR 101L to SR 101L would be provided as part of this alternative. The interchange with the SR 101L in this alternative would be located between the existing interchanges at Glendale Avenue and Northern Avenue, which are 1 mile apart. This system interchange location would allow the Glendale Avenue and Northern Avenue service interchanges to be retained to serve the

major commercial and recreational uses that are rapidly developing near the professional sports stadiums south of Glendale Avenue east of SR 101L.

Improvements would be required at the SR 101L to provide access and sufficient weaving distance for merging traffic. To meet ADOT design guidelines, the new facility's ramps would be braided with the ramps on the north side of Glendale Avenue and the ramps on the south side of Northern Avenue. Additional right-of-way along SR 101L would be needed to widen the roadway and existing bridge structures and to incorporate the system interchange ramps. The modifications of SR 101L would extend, at a minimum, south to Bethany Home Road and north to Olive Avenue.

Right-of-Way

From Dysart Road to 91st Avenue, Alternative 3 would require acquisition of new right-of-way through undeveloped property, and additional right-of-way would be needed along the Glendale Avenue portion. The right-of-way width for this alternative would be similar to the width needed for the western portion of Alternative 2 (140 feet to 350 feet) as described above. Total new right-of-way requirements for Alternative 3 would be about 426 acres. This is 100 acres more than for Alternatives 1 and 2; however, six fewer homes would be acquired.

3.3.4 No-Build Alternative

The No Build Alternative would consist of Northern Avenue as it currently exists with no improvements. Northern Avenue is a rural roadway with one lane in each direction from SR 303L to 112th Avenue; from 112th Avenue to US 60, it is a five-lane urban arterial street with two lanes in each direction and a two-way left turn lane. Planned improvements to SR 303L would be in accordance with ADOT plans except the planned system interchange with Northern Parkway would not be needed which would allow a full diamond interchange at Northern Avenue and SR 303L instead of the currently planned half diamond interchange. Other arterial streets in the vicinity of the study area would be improved in accordance with local agency transportation and capital improvement plans. Neighborhood and commercial access is assumed to remain as it currently exists.

In summary, Table 3-4 is a comparison of Alternatives 1, 2, 3, and the No Build to be carried forward for further analysis in Chapter 4.

3.3.5 Construction Staging Areas

Construction staging areas have not been specifically identified; however, whole parcels that would need to be acquired for right-of-way along the corridor have been identified. Since complete use of some of the parcels would not be required to accommodate the right-of-way, the

excess parcel area would be considered for use for construction staging activities and subsequently sold for public purchase after construction is complete. Construction staging areas would not be located adjacent to existing residential neighborhoods.

3.3.6 Construction-Related Traffic Control

Traffic along existing roadways within the corridor would be affected during construction as traffic is routed around construction zones. Construction would have varying effects along the right-of-way depending on the active construction area. Traffic on Northern Avenue and cross traffic at arterial streets would be maintained at all times. Traffic control plans and detour routes would be coordinated with the appropriate municipal officials at any given location.

3.3.7 Construction Sequencing

Funding and phasing for Northern Parkway is addressed in the MAG RTP, which would directly influence construction sequencing. Base funding for transportation projects is allocated by four separate five-year phases, starting with Phase I on January 1, 2006, and continuing through Phase IV, which ends on December 31, 2025. The specific sequence of construction would be determined as a selected alternative moves into more detailed design; funding sources and cash flow analyses are secured; right-of-way purchases are completed; and coordination with FCDMC, utility relocations, and other features are clarified.

3.3.8 Project Costs

Total project costs in 2009 dollars were estimated for each build alternative for comparison purposes as shown in Table 3-4. Alternative 1 is the least costly at \$612.6 million while Alternative 3 is the most costly at \$741.5 million. Since this project has been selected for federal funding and the total project costs exceed \$500 million, FHWA considers Northern Parkway a Major Project and must comply with additional FHWA requirements. One of the additional requirements is that FHWA must review the project cost estimate and that costs be expressed in terms of year of expenditure dollars (inflated dollars). A team from FHWA reviewed the project cost estimate for the proposed alternative (Alternative 1) to verify the accuracy and reasonableness of the current the estimate and to develop a probability range for the cost estimate. Based on the review and the project schedule which phases construction between 2010 and 2035, the total project cost in year of expenditure dollars (inflated) would range from \$973 million to \$1.051 billion with a certainty level of 80 percent. Funding sources beyond 2025 have not yet been identified.

Table 3-4
Comparison of Alternatives

Project Needs	Alternative 1 (Option 1 – Two Signals)	Alternative 2 (Option 2 – No Signals)	Alternative 3 (Southern Alignment)	No Build Alternative
1. Serve population growth (high-capacity route serving developing areas)	<ul style="list-style-type: none"> • Offers a high-capacity route that would link western growth area and SR 101L commercial area 	<ul style="list-style-type: none"> • Offers a higher-capacity route that links western growth area and SR 101L commercial area 	<ul style="list-style-type: none"> • Offers the highest-capacity route, which would link western growth area with SR 101L commercial area and potential growth area south of Glendale Avenue 	<ul style="list-style-type: none"> • Offers no additional capacity to accommodate growth
2. Improve travel time (from Loop 303 to US 60)	<ul style="list-style-type: none"> • Provides direct travel path • Offers good speeds, but signals increase travel delay (travel time = 24.2 minutes during peak hours) • Results in an average speed of 32.6 mph during peak hours and 45 to 55 mph during off-peak hours 	<ul style="list-style-type: none"> • Provides direct travel path • Improves travel time by offering no signals and considerable access control (20.2 minutes during peak hours) • Results in an average speed of 39.1 mph during peak hours and 45 to 55 mph during off-peak hours 	<ul style="list-style-type: none"> • Offsets out-of-direction travel path with improved travel times • Improves travel time by offering no signals and considerable access control (20.5 minutes during peak hours) • Results in an average speed of 41.9 mph during peak hours and 45 to 55 mph during off-peak hours 	<ul style="list-style-type: none"> • Increases travel time by providing no access control and numerous signals (41.6 minutes during peak hours) • Results in an average speed of 19.3 mph during peak hours and 30 to 35 mph during off-peak hours
3. Provide regional connectivity (connect to freeway and to State highway system)	<ul style="list-style-type: none"> • Provides regionally designated route • Provides regional connection to SR 303L • Provides enhanced connection to SR 101L • Provides enhanced connection to US 60 	<ul style="list-style-type: none"> • Provides regionally designated route • Provides regional connection to SR 303L • Provides enhanced connection to SR 101L • Provides enhanced connection to US 60 	<ul style="list-style-type: none"> • Provides regionally designated route • Provides regional connection to SR 303L • Provides regional connection to SR 101L • Provides enhanced connection to US 60 	<ul style="list-style-type: none"> • Provides no regional route • Provides no enhanced connections
4. Improve regional facility spacing	<ul style="list-style-type: none"> • Provides new regional corridor at desired spacing 	<ul style="list-style-type: none"> • Provides new regional corridor at desired spacing 	<ul style="list-style-type: none"> • Provides new regional corridor at desired spacing 	<ul style="list-style-type: none"> • Does not provide new regional corridor
5. Provide Agua Fria River crossing	<ul style="list-style-type: none"> • Provides new bridge crossing at Northern Avenue 	<ul style="list-style-type: none"> • Provides new bridge crossing at Northern Avenue 	<ul style="list-style-type: none"> • Maintains at-grade crossing at Northern Avenue. Provides new bridge crossing at Glendale Avenue adjacent to the existing bridge crossing 	<ul style="list-style-type: none"> • Maintains at-grade crossing at Northern Avenue

Table 3-4 (continued)
Comparison of Alternatives

Project Needs	Alternative 1 (Option 1 – Two Signals)	Alternative 2 (Option 2 – No Signals)	Alternative 3 (Southern Alignment)	No Build Alternative
6. Improve west-east street traffic flow	<ul style="list-style-type: none"> • Doubles capacity of route • Connects western Maricopa County to El Mirage, Peoria, Glendale, and Luke AFB, including future industrial areas, the commercial/stadium area, and central Phoenix 	<ul style="list-style-type: none"> • Triples capacity of route • Connects western Maricopa County to El Mirage, Peoria, Glendale, and Luke AFB, including future industrial areas, the commercial/stadium area, and central Phoenix 	<ul style="list-style-type: none"> • 3.5 times capacity of route • Connects western Maricopa County to El Mirage, Peoria, Glendale, and Luke AFB, including future industrial areas, the commercial/stadium area, and central Phoenix 	<ul style="list-style-type: none"> • Does not increase capacity • Does not provide high-capacity linkage of activity centers
7. Implement regional and local plans	<ul style="list-style-type: none"> • Provides an alternative that is consistent with adopted transportation plans and ballot measures 	<ul style="list-style-type: none"> • Provides an alternative that is generally consistent with adopted transportation plans, but level of access control and elimination of signals were not anticipated in those plans 	<ul style="list-style-type: none"> • Is not consistent with corridor or concept shown on ballot measures • Use of Glendale Avenue segment is not consistent with plans for a transit corridor on this alignment 	<ul style="list-style-type: none"> • Would not implement adopted plans
8. Reduce crash rates	<ul style="list-style-type: none"> • Reduction in traffic signals and full to partial access control • Reduces crash rates over arterial street conditions • Remaining 2 signals on an otherwise high-speed free flow roadway could present some localized safety concerns 	<ul style="list-style-type: none"> • No signals and full to partial access control reduces crash rates over arterial street conditions 	<ul style="list-style-type: none"> • No signals and full to partial access control reduces crash rates over arterial street conditions 	<ul style="list-style-type: none"> • Little access control and numerous traffic signals result in high crash rates on existing arterials
9. Right-of-way impacts	<ul style="list-style-type: none"> • 305 acres • 224 “partial take” parcels • 26 “total take” parcels • Relocate 28 houses • Relocate 9 businesses 	<ul style="list-style-type: none"> • 313 acres • 230 “partial take” parcels • 26 “total take” parcels • Relocate 28 houses • Relocate 9 businesses 	<ul style="list-style-type: none"> • 426 acres • 229 “partial take” parcels • 18 “total take” parcels • Relocate 22 houses • Relocate 10 businesses 	<ul style="list-style-type: none"> •
10. Project cost (2009 dollars)	<ul style="list-style-type: none"> • \$612.6 million 	<ul style="list-style-type: none"> • \$651.6 million 	<ul style="list-style-type: none"> • \$741.5 million 	<ul style="list-style-type: none"> •

NOTES: AFB = Air Force Base, mph = miles per hour, SR = State Route, US = United States